General

Guideline Title

Male urethral stricture: AUA guideline.

Bibliographic Source(s)

Wessells H, Angermeier KW, Elliott SP, Gonzalez CM, Kodama RT, Peterson AC, Reston J, Rourke K, Stoffel JT, Vanni A, Voelzke B, Zhao L, Santucci RA. Male urethral stricture: AUA guideline. Linthicum (MD): American Urological Association Education and Research, Inc.; 2016 Apr. 34 p. [180 references]

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Definitions for the body of evidence strength (Grade A, B, or C), the strength of the recommendations (Strong, Moderate, Conditional), and for statements labeled as Clinical Principle and Expert Opinion are provided at the end of the "Major Recommendations" field.

Diagnosis/Initial Management

1. Clinicians should include urethral stricture in the differential diagnosis of men who present with decreased urinary stream, incomplete emptying, dysuria, urinary tract infection (UTI), and after rising post void residual. (*Moderate Recommendation; Evidence Strength Grade C*)
2. After performing a history, physical examination, and urinalysis, clinicians may use a combination of patient reported measures, uroflowmetry, and ultrasound post void residual assessment in the initial evaluation of suspected urethral stricture. (*Clinical Principle*)
3. Clinicians should use urethro-cystoscopy, retrograde urethrography, voiding cystourethrography, or ultrasound urethrography to make a diagnosis of urethral stricture. (*Moderate Recommendation; Evidence Strength Grade C*)
4. Clinicians planning non-urgent intervention for a known stricture should determine the length and location of the urethral stricture. (*Expert Opinion*)
5. Surgeons may utilize urethral endoscopic management (e.g., urethral dilation or direct visual internal urethrotomy [DVIU]) or immediate suprapubic cystostomy for urgent management of urethral stricture, such as discovery of systematic urinary retention or catheterization prior to another surgical procedure. (*Expert Opinion*)
6. Surgeons may place a suprapubic (SP) cystostomy prior to definitive urethroplasty in patients dependent on an indwelling urethral catheter or intermittent self-dilation. (*Expert Opinion*)

Dilation/Internal Urethrotomy/Urethroplasty

7. Surgeons may offer urethral dilation, DVIU, or urethroplasty for the initial treatment of a short (<2 cm) bulbar urethral stricture. (*Conditional Recommendation; Evidence Strength Grade C*)
8. Surgeons may perform either dilation or DVIU when performing endoscopic treatment of a urethral stricture. (*Conditional Recommendation; Evidence Strength Grade C*)
9. Surgeons may safely remove the urethral catheter within 72 hours following uncomplicated dilation or DVIU. (*Conditional Recommendation; Evidence Strength Grade C*)
10. In patients who are not candidates for urethroplasty, clinicians may recommend self-catheterization after DVIU to maintain urethral patency. (*Conditional Recommendation; Evidence Strength Grade C*)
11. Surgeons should offer urethroplasty, instead of repeated endoscopic management, for recurrent anterior urethral strictures following failed dilation or DVIU. (*Moderate Recommendation; Evidence Strength Grade C*)
12. Surgeons who do not perform urethroplasty should offer patients referral to surgeons with expertise. (*Expert Opinion*)

Anterior Urethral Reconstruction

13. Surgeons may initially treat meatal or fossa navicularis strictures with either dilation or meatotomy. (*Clinical Principle*)
14. Surgeons should offer urethroplasty to patients with recurrent meatal or fossa navicularis strictures. (*Moderate Recommendation; Evidence Strength Grade C*)
15. Surgeons should offer urethroplasty to patients with penile urethral strictures, given the expected high recurrence rates with endoscopic treatments. (*Moderate Recommendation; Evidence Strength Grade C*)
16. Surgeons should offer urethroplasty as the initial treatment for patients with long (≥2 cm) bulbar urethral strictures, given the low success rate of DVIU or dilation. (*Moderate Recommendation; Evidence Strength Grade C*)
17. Surgeons may reconstruct long multi-segment strictures with one stage or multi-stage techniques using oral mucosal grafts, penile fasciocutaneous flaps or a combination of these techniques. (*Moderate Recommendation; Evidence Strength Grade C*)
18. Surgeons may offer perineal urethrostomy as a long-term treatment option to patients as an alternative to urethroplasty. (*Conditional Recommendation; Evidence Strength Grade C*)
19. Surgeons should use oral mucosa as the first choice when using grafts for urethroplasty. (*Expert Opinion*)
20. Surgeons should not perform substitution urethroplasty with allograft, xenograft, or synthetic materials except under experimental protocols. (*Expert Opinion*)
21. Surgeons should not perform a single-stage tubularized graft urethroplasty. (*Expert Opinion*)
22. Surgeons should not use hair-bearing skin for substitution urethroplasty. (*Clinical Principle*)

Pelvic Fracture Urethral Injury

23. Clinicians should use retrograde urethrography with voiding cystourethrogram and/or retrograde + antegrade cystoscopy for preoperative planning of delayed urethroplasty after pelvic fracture urethral injury (PFUI). (*Moderate Recommendation; Evidence Strength Grade C*)
24. Surgeons should perform delayed urethroplasty instead of delayed endoscopic procedures after urethral obstruction/obliteration due to PFUI. (*Expert Opinion*)
25. Definitive urethral reconstruction for PFUI should be planned only after major injuries stabilize and patients can be safely positioned for urethroplasty. (*Expert Opinion*)

Bladder Neck Contracture/Vesicourethral Stenosis

26. Surgeons may perform a dilation, bladder neck incision or transurethral resection for bladder neck contracture after endoscopic prostate procedure. (*Expert Opinion*)
27. Surgeons may perform a dilation, vesicourethral incision, or transurethral resection for post-prostatectomy vesicourethral anastomotic stenosis. (*Conditional Recommendation; Evidence Strength Grade C*)
28. Surgeons may perform open reconstruction for recalcitrant stenosis of the bladder neck or post-prostatectomy vesicourethral anastomotic stenosis. (*Conditional Recommendation; Evidence Strength Grade C*)

Special Circumstances

29. In men who require chronic self-catheterization (e.g., neurogenic bladder), surgeons may offer urethroplasty as a treatment option for urethral stricture causing difficulty with intermittent self-catheterization. (*Expert Opinion*)
30. Clinicians may perform biopsy for suspected lichen sclerosus (LS), and must perform biopsy if urethral cancer is suspected. (*Clinical Principle*)

31. In LS proven urethral stricture, surgeons should not use genital skin for reconstruction. (*Strong Recommendation; Evidence Strength Grade B*)

Post-operative Follow-up

32. Clinicians should monitor urethral stricture patients to identify symptomatic recurrence following dilation, DVIU or urethroplasty. (*Expert Opinion*)

Definitions

Body of Evidence Strength

Grade A: Well-conducted and highly-generalizable randomized controlled trials (RCTs) or exceptionally strong observational studies with consistent findings

Grade B: RCTs with some weaknesses of procedure or generalizability or moderately strong observational studies with consistent findings

Grade C: RCTs with serious deficiencies of procedure, generalizability, or extremely small sample sizes or observational studies that are inconsistent, have small sample sizes, or have other problems that potentially confound interpretation of data

Note: By definition, Grade A evidence is evidence about which the Panel has a high level of certainty, Grade B evidence is evidence about which the Panel has a moderate level of certainty, and Grade C evidence is evidence about which the Panel has a low level of certainty.

American Urological Association (AUA) Nomenclature Linking Statement Type to Level of Certainty, Magnitude of Benefit or Risk/Burden, and Body of Evidence Strength

	Evidence Strength A (High Certainty)	**Evidence Strength B (Moderate Certainty)**	**Evidence Strength C (Low Certainty)**
Strong Recommendation **(Net benefit or harm substantial)**	Benefits > Risks/Burdens (or vice versa) Net benefit (or net harm) is substantial Applies to most patients in most circumstances and future research is unlikely to change confidence	Benefits > Risks/Burdens (or vice versa) Net benefit (or net harm) is substantial Applies to most patients in most circumstances but better evidence could change confidence	Benefits > Risks/Burdens (or vice versa) Net benefit (or net harm) is substantial Applies to most patients in most circumstances but better evidence is likely to change confidence (rarely used to support a Strong Recommendation)
Moderate Recommendation **(Net benefit or harm moderate)**	Benefits > Risks/Burdens (or vice versa) Net benefit (or net harm) is moderate Applies to most patients in most circumstances and future research is unlikely to change confidence	Benefits > Risks/Burdens (or vice versa) Net benefit (or net harm) is moderate Applies to most patients in most circumstances and future research is unlikely to change confidence	Benefits > Risks/Burdens (or vice versa) Net benefit (or net harm) appears moderate Applies to most patients in most circumstances and future research is unlikely to change confidence
Conditional Recommendation **(No apparent net benefit or harm)**	Benefits = Risks/Burdens Best action depends on individual patient circumstances Future research unlikely to change confidence	Benefits = Risks/Burdens Best action depends on individual patient circumstances Better evidence could change confidence	Balance between Benefits & Risks/Burdens unclear Alternative strategies may be equally reasonable Better evidence likely to change confidence
Clinical Principle	A statement about a component of clinical care that is widely agreed upon by urologists or other clinicians for which there may or may not be evidence in the medical literature		
Expert Opinion	A statement, achieved by consensus of the Panel, that is based on members' clinical training, experience, knowledge, and judgment for which there is no evidence		

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Male urethral stricture

Guideline Category

Diagnosis

Evaluation

Management

Treatment

Clinical Specialty

Surgery

Urology

Intended Users

Advanced Practice Nurses

Patients

Physician Assistants

Physicians

Guideline Objective(s)

To provide evidence-based guidance to clinicians and patients regarding how to recognize symptoms and signs of a urethral stricture/stenosis, carry out appropriate testing to determine the location and severity of the stricture, and recommend the best options for treatment

Target Population

Male patients with urethral stricture

Interventions and Practices Considered

Diagnosis/Evaluation

1. Evaluation of presenting symptoms for differential diagnosis
2. History and physical examination
3. Urinalysis

4. Uroflowmetry
5. Ultrasound post void residual assessment
6. Urethro-cystoscopy
7. Retrograde urethrography
8. Voiding cystourethrography
9. Ultrasound urethrography
10. Determining the length and location of the urethral stricture

Treatment/Management

1. Urethral endoscopic management (e.g., urethral dilation or direct visual internal urethrotomy [DVIU])
2. Suprapubic cystostomy
3. Urethroplasty (techniques for reconstruction)
4. Catheter removal following uncomplicated dilation or DVIU
5. Self-catheterization after DVIU
6. Meatotomy
7. Perineal urethrostomy
8. Preoperative planning of delayed urethroplasty after pelvic fracture urethral injury
9. Bladder neck incision
10. Transurethral resection
11. Vesicourethral incision
12. Consideration for special circumstances (e.g., difficult self-catheterization, suspected lichen sclerosis, urethral cancer)
13. Follow-up and monitoring for recurrent strictures

Major Outcomes Considered

- Recurrent stricture
- Complications
- Obstruction
- Ejaculation/orgasmic function
- Erectile function
- Quality of life (QOL)
- Side effects
- Lower extremity injury/neurapraxia
- Uroflowmetry parameters
- American Urological Association Symptom Score (AUASS)
- Cystoscopy findings
- Need for repeat intervention
- Patient out-of-pocket cost, loss in productivity
- Readmissions
- Results of questionnaires (when available)

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Systematic Review

A systematic review was conducted to identify published articles relevant to the diagnosis and treatment of urethral stricture. Literature searches were performed on English-language publications using the PubMed, EMBASE, and Cochrane databases from 1/1/1990 to 12/1/2015. Data from studies published after the literature search cut-off will be incorporated into the next version of this guideline. Preclinical studies (e.g., animal models), commentary, editorials, non-English language publications, and meeting abstracts were excluded. Additional exclusion criteria were as follows: studies of females; studies of stricture prevention; patients with epispadias, congenital strictures, and duplicated urethra; trauma already covered under trauma guidelines including diagnosis and management of acute pelvic fracture urethral injury (PFUI) or disruption (PFUD); urethral cancer not related to stricture; or voiding symptoms not related to stricture. Studies with less than 10 patients were generally excluded from further evaluation and thus data extraction given the unreliability of the statistical estimates and conclusions that could be derived from them. In rare instances, studies with less than 10 patients or studies preceding the literature search date were included if no other evidence was identified. For certain key questions that had little or no evidence from comparative studies, case series with 50 or more patients were included. Review article references were checked to ensure inclusion of all possible relevant studies. Multiple reports on the same patient group were carefully examined to ensure inclusion of only non-redundant information.

Number of Source Documents

The systematic review yielded a total of 250 publications relevant to preparation of the guideline.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Body of Evidence Strength

Grade A: Well-conducted and highly-generalizable randomized controlled trials (RCTs) or exceptionally strong observational studies with consistent findings

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Grade C: RCTs with serious deficiencies of procedure, generalizability, or extremely small sample sizes or observational studies that are inconsistent, have small sample sizes, or have other problems that potentially confound interpretation of data

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Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction/Abstraction

Accepted articles were extracted separately by a team of four extractors (all contractors) using standard extraction forms. The methodologist developed the forms and trained the extractors. Given the size of the pool of eligible articles, independent double extraction was not possible for most of the articles. Instead, the methodologist reviewed the work of the other extractors and searched for inconsistencies and missing information in the extracted data.

Assessment of Study Quality

Conventional diagnostic cohort studies, diagnostic caseâ€control studies, or diagnostic case series that presented data on diagnostic test characteristics were evaluated using the Quality Assessment of Diagnostic Accuracy Studies (QUADAS) 2 tool, which evaluates the quality of diagnostic accuracy studies. If one or two items were answered "No" or "Unclear" the study was rated as moderate quality. If more than two items were answered as "No" or "Unclear" the study was rated as low quality. Some studies addressing diagnostic questions did not present information on diagnostic test characteristics but still included data that was judged to be potentially useful for diagnostic purposes. These studies were designated as case series and were not formally evaluated with a study quality instrument; instead, they were labeled as low quality due to their study design. This approach was also used for case series evaluating treatment, prognosis, or indications for diagnostic evaluation or treatment. Randomized controlled trials (RCTs) which had a comparison of interest were evaluated with the Cochrane Risk of Bias tool. If none or one of the six items was answered as "Unclear" the study was rated as high quality; if one item answered as "No" or two to three items answered as "Unclear" the study was considered to be of moderate quality. Two or more "No" answers or four or more "Unclear" answers and the study was considered to be of low quality. Cohort studies with a comparison of interest were evaluated with the Drug Effectiveness Review Project instrument. Three "No" answers or four "Unclear" answers on the internal validity section of this instrument would lead to a moderate quality rating, while five "No" answers or six "Unclear" answers would lead to a low quality rating.

Analyses

A separate analysis was conducted for each of the 55 key questions for which at least one study met the inclusion criteria. For key questions with multiple included studies, heterogeneity in the types of data reported and the patient populations in each study precluded quantitative analyses. Instead, a narrative synthesis was used to summarize the evidence for each key question. The body of evidence for each key question was rated using the American Urological Association (AUA) system of A, B, or C (see the "Rating Scheme for the Strength of the Evidence" field).

Methods Used to Formulate the Recommendations

Expert Consensus

Expert Consensus (Delphi)

Description of Methods Used to Formulate the Recommendations

This document was written by the Male Urethral Stricture Guideline Panel of the American Urological Association Education and Research, Inc. (AUA), which was created in 2015. The Practice Guidelines Committee (PGC) of the AUA selected the committee chair. Panel members were selected by the chair. Membership of the panel included specialists in urology with specific expertise on this disorder. The mission of the panel was to develop recommendations that are analysis-based or consensus-based, depending on panel processes and available data, for optimal clinical practices in the treatment of male urethral strictures.

AUA Nomenclature: Linking Statement Type to Evidence Strength

The AUA nomenclature system explicitly links statement type to body of evidence strength, level of certainty, magnitude of benefit or risk/burdens, and the Panel's judgment regarding the balance between benefits and risks/burdens (see the "Rating Scheme for the Strength of the Recommendations" field).

For some clinical issues, particularly diagnosis, there was little or no evidence from which to construct evidence-based statements. Where gaps in the evidence existed, the Panel provides guidance in the form of *Clinical Principles* or *Expert Opinion* with consensus achieved using a modified Delphi technique if differences of opinion emerged.

Rating Scheme for the Strength of the Recommendations

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Expert Opinion	A statement, achieved by consensus of the Panel, that is based on members' clinical training, experience, knowledge, and judgment for which there is no evidence		

Cost Analysis

Published cost analyses were reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

The American Urological Association Education and Research, Inc. (AUA) conducted a thorough peer review process. The draft guidelines document was distributed to 90 peer reviewers. The panel reviewed and discussed all submitted comments and revised the draft as needed. Once finalized, the guideline was submitted for approval to the Practice Guidelines Committee and the AUA Science and Quality Council. Then it was submitted to the AUA Board of Directors for final approval. It was approved by the AUA Board of Directors in April 2016.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

For some clinical issues, there was little or no evidence from which to construct evidence-based statements. Where gaps in the evidence existed, the Panel provides guidance in the form of *Clinical Principles* or *Expert Opinions* with consensus.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

The magnitude of benefit or risk/burdens and the Panel's judgment regarding the balance between benefits and risks/burdens were considered when formulating recommendation statements.

Potential Harms

- Erectile dysfunction, as measured by the International Index of Erectile Function (IIEF) may occur transiently after urethroplasty with resolution of nearly all reported symptoms approximately six months postoperatively. Meta-analysis has demonstrated the risk of new onset erectile dysfunction following anterior urethroplasty to be ~1%. Type of urethroplasty, specifically anastomotic urethroplasty, as a causative risk factor for sexual dysfunction remains unclear. Erectile function following urethroplasty for pelvic fracture urethral injury (PFUI) does not appear to significantly change as a result of surgery. Erectile dysfunction in this cohort may be related to the initial pelvic trauma rather that the subsequent urethral reconstruction.
- Ejaculatory dysfunction manifested as pooling of semen, decreased ejaculatory force, ejaculatory discomfort, and decreased semen volume has been reported by up to 21% of men following bulbar urethroplasty. Urethroplasty technique may play a role in the occurrence of ejaculatory dysfunction but the exact etiology remains uncertain. Conversely, some patients, as measured by the Men's Sexual Health Questionnaire (MSHQ), will notice an improvement in ejaculatory function following bulbar urethroplasty, particularly those with pre-operative ejaculatory dysfunction related to obstruction caused by the stricture. Data on ejaculatory function in men undergoing penile urethroplasty or urethroplasty for PFUI is limited.
- The modestly invasive nature of retrograde urethrography reflects the potential risks, including patient discomfort, urinary tract infection (UTI), hematuria, and contrast extravasation. UTI is rare and contrast extravasation is very rare in expert hands. Exposure to the contrast puts the patient at risk for a contrast reaction, should there be an allergy. The risk is very low in the absence of inadvertent extravasation, and may be mitigated by pre-medication with oral corticosteroids and histamine blockers.

Qualifying Statements

Qualifying Statements

- While these guidelines do not necessarily establish the standard of care, the American Urological Association Education and Research, Inc. (AUA) seeks to recommend and to encourage compliance by practitioners with current best practices related to the condition being treated. As medical knowledge expands and technology advances, the guidelines will change. Today these evidence-based guidelines statements represent not absolute mandates but provisional proposals for treatment under the specific conditions described in each document. For all these reasons, the guidelines do not pre-empt physician judgment in individual cases.
- Treating physicians must take into account variations in resources, and patient tolerances, needs, and preferences. Conformance with any clinical guideline does not guarantee a successful outcome. The guideline text may include information or recommendations about certain drug uses ("off label") that are not approved by the Food and Drug Administration (FDA), or about medications or substances not subject to the FDA approval process. AUA urges strict compliance with all government regulations and protocols for prescription and use of these substances. The physician is encouraged to carefully follow all available prescribing information about indications, contraindications, precautions and warnings. These guidelines and best practice statements are not intended to provide legal advice about use and misuse of these substances.
- Although guidelines are intended to encourage best practices and potentially encompass available technologies with sufficient data as of close of the literature review, they are necessarily time-limited. Guidelines cannot include evaluation of all data on emerging technologies or management, including those that are FDA-approved, which may immediately come to represent accepted clinical practices. For this reason, the AUA does not regard technologies or management which are too new to be addressed by this guideline as necessarily experimental or investigational.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Mobile Device Resources

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Wessells H, Angermeier KW, Elliott SP, Gonzalez CM, Kodama RT, Peterson AC, Reston J, Rourke K, Stoffel JT, Vanni A, Voelzke B, Zhao L, Santucci RA. Male urethral stricture: AUA guideline. Linthicum (MD): American Urological Association Education and Research, Inc.; 2016 Apr. 34 p. [180 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2016 Apr

Guideline Developer(s)

American Urological Association Education and Research, Inc. - Medical Specialty Society

Source(s) of Funding

Funding of the panel was provided by the American Urological Association Education and Research, Inc. (AUA). Panel members received no

remuneration for their work.

Guideline Committee

Male Urethral Stricture Guideline Panel

Composition of Group That Authored the Guideline

Panel Members: Hunter Wessells, MD (*Co-Chair*), University of Washington, Seattle, WA; Richard A. Santucci, MD (*Co-Chair*), The Detroit Medical Center, Detroit, MI; Kenneth W. Angermeier, MD, Cleveland Clinic, Cleveland, OH; Sean P. Elliott, MD, University of Minnesota, Minneapolis, MN; Christopher M. Gonzales, MD, Northwestern Medical Faculty Foundation, Chicago, IL; Ron T. Kodama, MD, Sunnybrook Heath Sciences Centre, Toronto, ON Canada; Andrew C. Peterson, MD, Duke University Medical Center, Durham, NC; Keith Rourke, MD, University of Alberta, Edmonton, AB Canada; John T. Stoffel, MD (*PGC Representative*), University of Michigan Medical Center, Ann Arbor, MI; Alex Vanni, MD, Lahey Clinic Medical Center, Burlington, MA; Bryan Voelzke, MD, University of Washington, Seattle, WA; Lee Zhao, MD, NYU Medical Center, New York, NY

Financial Disclosures/Conflicts of Interest

Conflict of Interest (COI) Disclosures

All panel members completed COI disclosures. Those marked with (C) indicate that compensation was received. Disclosures listed include both topic- and non-topic–related relationships.

Consultant/Advisor: Sean Elliott, American Medical Systems (C), GT Urological (C)

Meeting Participant or Lecturer: Kenneth Angermeier, American Medical Systems (C); Sean Elliott, American Medical Systems (C); Ron Kodama, Journal of Urology/GURS; Andrew Peterson, American Medical Systems, Inc. (C); Hunter Wessells, National Institutes of Health

Scientific Study or Trial: Ron Kodama, Journal of Urology/GURS; Andrew Peterson, American Medical Systems, Inc. (C); John Stoffel, Uroplasty; Hunter Wessells, National Institutes of Health

Leadership Position: Sean Elliott, Percuvision (C); Ron Kodama, Journal of Urology/GURS; Andrew Peterson, Society of Government Service Urologists, Southeastern Section— AUA Board of Directors, GURS Board of Directors

Other: Christopher Gonzalez, American Medical Systems; Hunter Wessells, National Institutes of Health

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the American Urological Association Education and Research, Inc. (AUA) Web site .

Availability of Companion Documents

The AUA Guidelines-At-A-Glance mobile app is available for download from the American Urological Association Education and Research, Inc. (AUA) Web site .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on September 2, 2016. The information was not verified by the guideline developer.

Copyright Statement

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